

## Taxonomic studies on some African *Hyphydrus* (Coleoptera: Dytiscidae)

by

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*Hyphydrus malawiensis* spec. nov., *H. nigeriensis* spec. nov., and *H. inopinatus* spec. nov. are described, with notes on seven other species in the same subgenus (*Apriophorus*), one of which, *H. circularis* Rég., is sunk in synonymy with *H. cycloides* Rég.; a key to the males of all nine species is provided. Additional features of the male of *H. fuscus* O.-C. are described. In the subgenus *Allophydrus*, *H. residuus* spec. nov. is described and distinguished from *H. grandis* Cast. and *H. caffer* Boh.

Difficulties experienced in the naming of some *Hyphydrus* spp. from Nigeria resulted in an examination of the species group containing the very similar forms, *H. cycloides* Rég., *H. circularis* Rég., *H. delibatus* Guign., *H. gabonicus* Rég., *H. pelates* Guign., *H. lamottei* Legros and *H. stipator* Guign., and an addition to their number of three new species, *H. malawiensis*, *H. nigeriensis* and *H. inopinatus*, which are described in the following pages.

All these species belong to the subgenus *Apriophorus* Guign., characterised by a line of punctures on the external face of the metatibiae, the absence of a deep well-limited groove behind the clypeal border, and the metatibial spines not serrulate. Besides these characters they have in common two shallow depressions on the head, a basically similar colour pattern (figs. 1-8) and a double punctuation (i.e. a mixture of large and small punctures), very unequal, on the elytra. The ratio of large and small punctures may vary somewhat within the species.

With the exception of *H. stipator* Guign. the males all have the longer of the two spines situated at the internal angle of the posterior margin of the hind tibiae (hereinafter referred to as the posterior tibial spines) more or less sinuate and curved at the tip, and all have the last visible abdominal sternite transversely depressed, the depression sometimes followed by a tubercle.

It is very difficult to find definitive characters for the separation of the species—even the aedeagi are much alike and subject to minor variations—but the disposition of groups of hairs on the prosternal process between the anterior coxae, the degree of curvature of the posterior tibial spines (taken in conjunction with size, shape and density of the large punctures on the elytra), and the aedeagus are the chief characters used for diagnosis.

*Hyphydrus cycloides* Régimbart, 1889 (p. 56), figs 1, 2, 13, 15, 20

***Hyphydrus circularis* Régimbart, 1895 (p. 53), *syn. nov.***

*H. cycloides* Rég. from the Congo was differentiated by Régimbart from

*circularis* Rég. from Madagascar by the elytra being less widely rounded behind, the smaller pronotum (not apparently constant) and the denser and stronger punctuation on the elytra. To these differences Guignot has added a more restricted testaceous colour pattern, a median lobe of the aedeagus with the apex more deeply divided and the diverticulae less outwardly turned, and very narrow parameres. This latter statement I cannot substantiate.

*H. circularis* Rég. is said to be confined to Madagascar, and *cycloides* has been reported from the Congo, East Africa and Natal in South Africa (see figs. 1-3 for elytral colour patterns). Unfortunately I have only three males of *circularis* from Madagascar for study. In this short series slight differences in form, the shape of the clypeus, punctuation of the pronotum and elytra, curvature of the sides of the pronotum, and median lobe of the aedeagus are apparent. According to Régimbart the colour pattern of the elytra is variable. The posterior tibial spines are sinuate and strongly curved at the tip. The only definitive difference between these and *cycloides* from the mainland is the supposed difference in the median lobe of the aedeagus.

Standing in my collection are specimens from Zanzibar, Tanzania (Tanganyika), Uganda, Malawi (Nyasaland), Zambia (Northern Rhodesia), Rhodesia, Swaziland, Transvaal, Natal and the Eastern Cape Province of South Africa, all of which, if *circularis* Rég. is proper to Madagascar, should be *cycloides* Rég. (Régimbart refers a specimen from Natal to this species). All the males have the posterior tibial spines sinuate and strongly curved at the tip.

In the majority the density of large punctures on the elytra is greater than in the Madagascar specimens, but in some cases individuals taken from the same collecting places show a considerable reduction in the number of large punctures so that they are more widely separated than in any I have seen from Madagascar. In other respects too there is considerable variation between individuals, and the median lobes of the aedeagi could be arranged in an uninterrupted series ranging from that of Régimbart's typical *cycloides* to that of *circularis* (see figs. 13-20). This variation may occur even amongst individuals from the same locality.

In the absence of any other definitive character by which the species may be distinguished one from another it seems necessary to place them in synonymy.

DISTRIBUTION. Congo (type *cycloides*), Uganda, Kenya, Tanzania (Tanganyika), Zanzibar, Malawi, Zambia, Rhodesia, South Africa (Natal, Transvaal and E. Cape Province), Madagascar (type *circularis*).

*Hyphydrus gabonicus* Régimbart, 1895 (p. 54), figs 5, 11

L. 3.1-3.4 mm. In examples which I have seen and in those described the testaceous colouring of the elytra is reduced to isolated spots (fig. 5). In my specimen from Gabon the border of the clypeus is fine and less raised than in *cycloides*; the large punctures on the elytra are numerous and rather strong; the tuft of long hairs on the prosternal process is wider at the base than in *cycloides* and the hairs appear to be fused; the tibial spines are clearly sinuate before the apex and the tip curved; the last abdominal sternite is transversely impressed, the impression followed by an indistinct wide tubercle; the median lobe of the aedeagus is as in fig. 11.

DISTRIBUTION. Gabon (types), Portuguese Guinea and Congo (t. Guignot) ?Rhodesia (t. Régimbart).

*Hyphydrus lamottei* Legros, 1958 (p. 212, fig. 1), figs 6, 28

L. 3,75. Widely and shortly oval with sides rounded. The elytral pattern is like that of individuals of *circularis* Rég. which have the testaceous colouring expanded and the juxta-sutural line visible, but in the type this line is faint, extends for only about two thirds of the elytral length and ends in a small testaceous expansion (fig. 6). The large punctures on the elytra are strong but not dense, except near the suture, and sparser in the region of the testaceous basal band. The fine punctures on the disc of the pronotum are not very dense and the lateral clear spaces, present in all the species in varying degree, are more extensive than usual and very clear. The posterior tibial spines are stout and, to me, clearly sinuate and fairly strongly curved at the tip although Legros describes them as 'subrectiligne, faiblement courbé seulement à son extrême pointe'. The apical abdominal sternite is transversely impressed, the impression followed by an indistinct tubercle. Unfortunately the mounted aedeagus is poorly chitinised and it is not possible to make an exact comparison with those of other species although it is evidently very near to that of *malawiensis* spec. nov. (figs. 10 and 28). Legros has given a fig. (1958:212) in which he shows three preapical hairs on each side. These I cannot see in the mounted aedeagus of the type.

DISTRIBUTION. West Africa; Guinea, Mont Nimba ♂ type and ♀ allotype.

*Hyphydrus malawiensis* spec. nov., fig. 10

L. 3,2-3,5 mm. Oval, not attenuated behind. Posterior tibial spines slightly but clearly sinuate and gently curved at the tip. Prosternal process between the anterior coxae provided with two tufts of hairs. Testaceous pattern of the elytra as in *cycloides* but variable as in that species.

*Head.* Rufo-testaceous but brownish behind, shining but with traces of reticulation between the eyes; very densely punctured with a double punctuation, the fine punctures more concentrated behind; clypeus with a rather fine border, almost truncate. Antennae testaceous.

*Pronotum.* Blackish brown with a wide testaceous margin; shining, not reticulate; sides slightly rounded, not much contracted in front; doubly punctured; the anterior margin and the disc finely punctured with a few large punctures, which almost invade the disc, behind the anterior marginal punctures, and a concentration of still larger punctures in the posterior third.

*Elytra.* Black and testaceous with a varying pattern as in *cycloides*; shining and not reticulate; sides not very rounded; punctuation double, the large punctures strong and numerous but their density varying a little from individual to individual, the small punctures fine and poorly impressed.

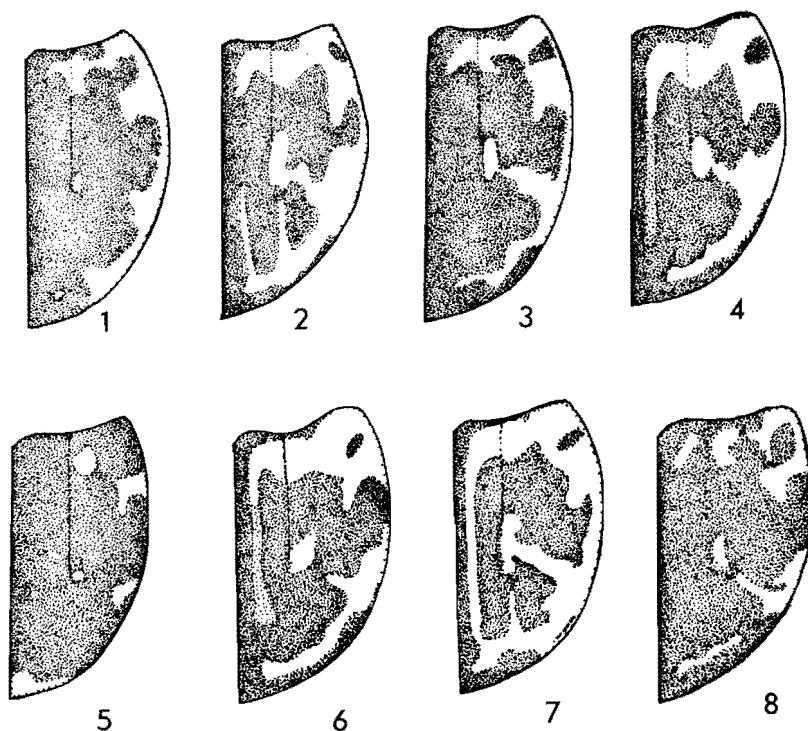
*Underside.* Rufo-testaceous or brown; shining not reticulate; strongly punctured but epipleura with only a few scattered shallow punctures; the long hairs on the prosternal process arranged in two tufts; posterior tibial spines slightly sinuate and gently curved at the tip.

**MALE.** Median lobe of the aedeagus as in fig. 10. Last visible abdominal sternite transversely impressed; anterior trochanters incised.

**FEMALE.** Head more clearly reticulate; posterior tibial spines straight; anterior trochanters not incised.

DISTRIBUTION. Malawi; Fort Hill 5.x.1948 (type), Monkey Bay 28.ix.1948, R. Mtiti 1.x.1948, Dedza 29.ix.1948. (paratypes).

This species is very like *cycloides* Rég., but the clypeal border is finer and the posterior tibial spines of the male less sinuate and less strongly curved at the tip. It is also like *lamottei* Legros and *pelates* Guign., but the size is smaller and the form less rounded than that of either of these species.



Figs 1-8. Elytral patterns. 1. *H. cycloides* Rég. from Uganda. 2. *H. cycloides* Rég. from Malawi. 3. *H. circularis* Rég. from Madagascar. 4. *H. delibatus* Guign. from Uganda. (The pattern of the type is as in fig. 1.). 5. *H. gabonicus* Rég. from Gabon. 6. *H. lamottei* Legros (type). 7. *H. nigenriensis* spec. nov. (type). 8. *H. pelates* Guign. (type).

*Hyphydrus pelates* Guignot, 1954 (p. 9), figs. 8, 26

L. 3.5-3.7 mm (the type is 3.7 mm). Almost circular, very little narrowed behind; pronotum wide, sides rounded; densely punctured on the disc. Elytral pattern as in fig. 8. Large punctures of the elytra not very dense, strong and well impressed as are the small punctures. Prosternal process with two approximately equal tufts of long hairs. Male with the posterior tibial spines very slightly sinuate and slightly curved at the tip. Median lobe of the aedeagus as in fig. 26.

This species is very like *malawiensis* spec. nov., but is more rounded and larger and has the small punctures on the elytra more impressed. The posterior tibial spines of the male are straighter and the transverse impression of the apical abdominal sternite is followed by an evident tubercle.

DISTRIBUTION. Congo; Mubale (type), Mukana.

***Hyphydrus inopinatus* spec. nov., fig. 24**

L. 3.0–3.2 mm. Widely oval, not attenuated behind; not very convex, disc of elytra rather flat. Colour pattern basically similar to the other members of the group but with the basal testaceous band on the elytra usually rather wide, especially near the suture, and the juxtasutural longitudinal testaceous line usually present but sometimes interrupted in the middle; very like that of *nigeriensis* spec. nov. (fig. 7). Posterior tibial spines of the male very slightly sinuate and very slightly curved at the tip.

*Head.* Rufo-testaceous with margin of the clypeus brown and vague brown markings in the middle and behind. Clypeal margin raised and rather fine; subtruncate. Punctuation dense, its double nature only clear behind; reticulation variable in the males, in some specimens the head is shining and only has traces of reticulation in the middle between the two shallow depressions, sometimes the head is dull in front and more extensively reticulate as it is in the females. Antennae testaceous, usually with the anterior margins of the joints ringed with brown.

*Pronotum.* Black or brownish black with the margins rufo-testaceous; shining, not reticulate; sides slightly rounded, not much contracted in front; punctuation double, rather variable but usually dense with the disc finely punctured and the punctures at the base very strong.

*Elytra.* Pattern as above. Shining, not reticulate, sides rounded. Punctuation strong and dense, the density of the large punctures varying a little in different individuals.

*Underside.* Dark brown or rufo-testaceous and brown with epipleura and legs, except the trochanters, testaceous; shining, not reticulate, strongly punctured. Prosternal process between the anterior coxae with one tuft of hairs which is wide at the base.

**MALE.** Posterior tibial spines scarcely sinuate and scarcely curved at the tip. Incision of the anterior trochanters shallow, the external crochet covering it wide and flat and less twisted than in the other species. Apical abdominal sternite with a deep transverse depression. Median lobe of the aedeagus as in fig. 24.

**FEMALE.** No incision on the anterior trochanters, last visible abdominal sternite not impressed, posterior spines rectilinear, head reticulate in front.

**DISTRIBUTION.** Nigeria: Stream, escarpment Jos-Wamba road, 13.iv.1963, ♂ holotype, ♀ allotype and 2 paratypes; pool in stream bed Kontagora-Kaduna road, 2 paratypes; stream Makurdi-Enugu rd, 24.iv.1963, 1 ♀ paratype.

This species might be mistaken for *H. malkini* B-B. the aedeagus being very similar. That species is however much wider and the head has one wide chagreened impression in which the punctures are scarcely visible, whereas *inopinatus* has two shallow impressions on the head and, although reticulate in a varying degree in the middle, the head is completely and evidently covered with punctures.

***Hyphydrus nigeriensis* spec. nov., figs. 7, 25**

L. 3.3–3.5 mm. Rather widely and shortly oval, scarcely attenuated behind. Elytral pattern with the testaceous colour expanded and the juxta-sutural longitudinal testaceous line usually present (fig. 7). Prosternal process with only one tuft of hairs. Posterior tibial spines scarcely sinuate and very little curved at the tip.

*Head.* Rufo-testaceous with vague brownish markings behind; closely punctured, the punctuation being not very clearly double and the back with fine punctures only; shining but with traces of a reticulation; clypeal border rather fine and little raised, subtruncate. Antennae testaceous.

*Pronotum.* Blackish brown with a wide testaceous margin, shining, not reticulate; sides slightly rounded, not much contracted in front; densely punctured, the anterior margin double punctured but with the large punctures not much larger than the fine, behind these some irregularly placed large punctures, sometimes invading the finely punctured disc, and the hind margin with irregular rows of rather close set well-impressed large punctures interspersed amongst the fine. As in the other species the punctuation varies in different individuals.

*Elytra.* Not attenuated behind, sides rounded; shining, not reticulate. Pattern as in fig. 7 but the testaceous colour is sometimes reduced, the individuals then resembling typical *cycloides* Rég. The density of the large punctures on the elytra is average but there is individual variation, the small punctures not very dense and rather poorly impressed.

*Underside.* Rufo-testaceous or brown; strongly punctured but epipleura with only a few scattered shallow inconspicuous punctures. Prosternal process between the anterior coxae with one tuft of hairs in which the longer hairs are behind and the shorter in front, sometimes giving the impression of two unequal tufts.

**MALE.** Anterior trochanters incised; posterior tibial spines scarcely sinuate and very slightly curved at the tip. Apical abdominal sternite with a transverse depression followed by an indistinct tubercle; median lobe of the aedeagus as in fig. 25.

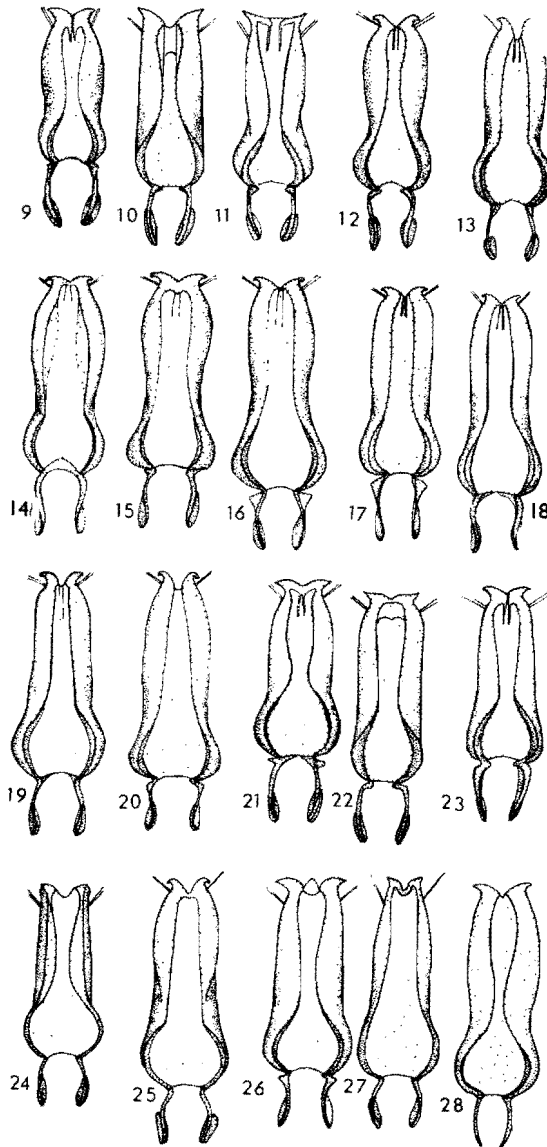
**FEMALE.** Head reticulate; anterior trochanters not incised, tibial spine retilinear.

**DISTRIBUTION.** Nigeria: Stream, Jos reservoir, 10.iv.1963, ♂ holotype, ♀ allotype and 5 ♀ (paratypes); R. Kaduna, 4½ miles from Jos, 13.iv.1963, 2 ♂ and 5 ♀ (paratypes).

This species is very near indeed to light coloured *cycloides* Rég.; even the aedeagus is very similar. The posterior tibial spines of the male are, however, much less sinuate and much less strongly curved at the tip and the dorsal folds of the median lobe of the aedeagus are more parallel and more abruptly diverted near the base.

***Hyphydrus stipator* Guignot, 1942 (p. 12), fig. 27**

L. 2.8–3.0 mm. Very similar to the other members of the group but on the average a little smaller and with the elytra a little less rounded at the shoulders. The punctuation of both pronotum and elytra is variable; in some cases the large punctures on the pronotum are almost entirely confined to the base but in others this is not true. The density of the large punctures on the elytra is also variable. The prosternal process is provided with one tuft of hairs. The male is recognisable by the rectilinear posterior



Figs. 9–28. Median lobe of the aedeagus. 9. *H. delibatus* Guign., paratype from the Congo. 10. *H. malawiensis* spec. nov. 11. *H. gabonicus* Rég. 12. *H. circularis* Rég. from Madagascar. 13. *H. cycloides* Rég. from the Congo. 14. *H. circularis* Rég. from Madagascar (a different specimen). 15–20. *H. cycloides* Rég. 15. from the eastern Cape province of S. Africa, 16. from Natal, 17. from Zanzibar, 18. from Malawi, 19. from Swaziland, 20. from Malawi. 21–23. Three specimens of *H. delibatus* Guign. 21. from Kenya, 22. from Uganda, 23. from Uganda. 24. *H. inopinatus* spec. nov. (type). 25. *H. nigeriensis* spec. nov. (type). 26. *H. pelates* Guignot (type). 27. *H. stipator* (type) 28. *H. lamottei* (type).

tibial spines without any curvature at the tip, the median lobe of the aedeagus more narrowed in the apical third than in *cycloides* Rég., and the narrower parameres (fig. 27).

DISTRIBUTION. W. Africa: Ivory Coast (type), Cameroons, Nigeria(!).

*Hyphydrus delibatus* Guignot, 1948 (p. 6, fig. 2), figs. 4, 9, 21-23

L. 3,3-3,5 mm. The elytral colour pattern varies from that of *cycloides* Rég. as pictured in fig. 1 to that of *delibatus* (a paratype) as in fig. 4. It is very like *cycloides* but can always be distinguished by the presence of three tufts of hairs on the prosternal process and the diminution of curvature of the posterior tibial spines of the male. The median lobe of the aedeagus is subject to minor variations (figs. 9, 21, 22, 23) but clearly different from *cycloides*, the apex being less deeply cleft and the two halves more everted and sharply pointed.

DISTRIBUTION. Congo (types), Uganda, Kenya.

#### Key to the males of the preceding species\*

- 1 Prosternal process provided with not more than two tufts of hairs.
- 2 Posterior tibial spines of the male sinuate and curved at the tip.
- 3 Posterior tibial spines of the male strongly sinuate and strongly curved at the tip. Size 3,1-3,6 mm . . . . . **cycloides** Rég.
- 3' Posterior tibial spines of the male less strongly sinuate but curved at the tip.
- 4 Posterior tibial spines of the male clearly sinuate and clearly but not strongly curved at the tip.
- 5 Testaceous colour pattern on the elytra reduced to isolated spots. Shape round. Size 3,1-3,4 mm . . . . . **gabonicus** Rég.
- 5' Testaceous colour pattern of the elytra expanded; basal testaceous band usually present although sometimes discontinuous.
- 6 Size larger, form almost circular. 3,75 mm . . . . . **lamottei** Legros.
- 6' Size smaller, form narrower and oval. 3,2-3,5 mm . . . . . **malawiensis** spec. nov.
- 4' Posterior tibial spines of the male scarcely sinuate and only slightly curved at the tip.
- 7 Transverse depression of the apical abdominal sternite followed by a distinct tubercle. Shape almost circular. 3,5-3,7 mm. . . . . **pelates** Guign.
- 7' Transverse depression of the apical abdominal sternite not followed by a distinct tubercle.
- 8 Form widely rounded, size smaller. 3,0-3,2 mm. . . . . **inopinatus** spec. nov.
- 8' Form narrower, rounded oval, size larger. 3,3-3,5 mm. . . . . **nigeriensis** spec. nov.
- 2' Posterior tibial spines rectilinear and not curved at the tip. 2,8-3,0 mm. . . . . **stipator** Guign.
- 1' Prosternal process provided with three tufts of hairs. 3,3-3,5 mm. . . . . **delibatus** Guign.

*Hyphydrus* [*Apriophorus*] *fuscus* Omer-Cooper, 1931 (p. 764, Pl. VIII fig. 8), fig. 29

Neither the aedeagus nor features special to the male have hitherto been described. The original description states 'head densely and strongly reticulate'. In reality the head is almost shagreened in front and reticulate behind. The punctuation is not dense except on the vertex, where there is a group of close large punctures. The clypeus is finely bordered and subtruncate. The pronotum of the male is not reticulate but strongly punctured along the anterior margin, sides and base. The large punctures

\*It has not been found possible to make a key excluding characters possessed only by the male. When using this key it must be remembered that anything but an accurate side view of the tibial spines may lead to erroneous classification.



at the base are stronger than the others and all have somewhat inconspicuous small punctures between them. The disc is predominantly finely punctured but a few of the large punctures invade this region. The coarse punctures of the elytra are very irregularly placed with a few very small shallow punctures between them. The elytra are shining and not reticulate. The penultimate abdominal sternite bears in the middle of its posterior border a roughened triangular projection such as I am not familiar with in any other *Hyphydrus* (fig. 29C) but somewhat reminiscent of that found on the same sternite in the genus *Africophilus* belonging to the subfamily Laccophilini. The apical abdominal sternite is convex but with a strong transversely wrinkled antepical depression. The stout and complicated aedeagus is as in fig. 29. The posterior tibial spines are rectilinear with the apex very slightly curved.

DISTRIBUTION. Ethiopia (Abyssinia); Addis Ababa, British Legation, pond no. 2. 8.ix.1926.

*Hyphydrus* (*Allophydrus*) *grandis* Castlenau, 1834, *Hyphydrus* (*Allophydrus*) *caffer* Boheman, 1848 and *Hyphydrus* (*Allophydrus*) *caffer*; Gschwendtner, 1935, Balfour-Browne, 1950 and Omer-Cooper, 1965 *nec* Boheman.

These three species belonging to Zimmerman's subgenus *Allophydrus* (separated from the other subgenera by the absence of a regular line of punctures on the external face of the metatibiae) are so very much alike and each subject to individual variation, even in the same geographical region, that confusion between them could only be expected. *Hyphydrus caffer* Boh. so named by Gschwendtner, Balfour-Browne and Omer-Cooper is not the species of Boheman but a distinct species hitherto undescribed.

*Hyphydrus grandis* Cast. was described from specimens taken in Senegal: *H. caffer* Boh. from 'Caffraria orientali': Gschwendtner's *H. caffer* Boh. (without comment) from the Chobe swamp in northern Botswana (Bechuanaland). Balfour-Browne (1950: 361) named the same species, taken in N.W. Zambia (N. Rhodesia), *caffer* Boh., remarking that it differed from *grandis* Cast in that the anterior trochanters of the male were without the long blunt spine characteristic of that species. Following Balfour-Browne I published a drawing of the aedeagus of Gschwendtner's *caffer* Boh. supposing it to be the true *caffer* of Boheman (1965: 113).

On the strength of Balfour-Browne's statement regarding the anterior trochanters of male *H. caffer* Boh. I had considered specimens obtained in the Transvaal (S. Africa), Rhodesia, Malawi, Mozambique and Zanzibar, with the long spine on the anterior trochanters of the males, to be *H. grandis* Cast. It was only whilst trying to identify some *Hyphydrus* from Nigeria and the Sudan that it became evident to me that there were slight but apparently constant differences in the aedeagi of specimens presumed to be *grandis* Cast. from the south and those from the northern regions. Those from the south have the median lobe wider in dorsal view, the anterior narrow prolongations shorter and a slightly different arrangement of the setae which are characteristic of both (figs. 30 and 31).

In 1954 Guignot named specimens from the Park of Upemba in the Congo *H. caffer* Boh., saying that they were more rounded than *grandis* Cast., the clypeus more truncate and the aedeagus wider. I have seen one of these specimens and its aedeagus is identical with those of specimens identified by me as *grandis* Cast. from Southern Africa. Unfortunately neither the more rounded sides nor the more truncate clypeus is constant, whether in specimens from the north or south, and these features are not features upon

which a certain diagnosis could be made. In order to solve the problem of the real identity of *H. caffer* Boh. the types were needed and were kindly lent to me by the Riksmuseum, Stockholm. Unfortunately both specimens (the only ones in their collections) are females, one with the reticulation very impressed, the other shining and the reticulation on the pronotum and elytra scarcely visible. (These two forms of the female also appear in my collection.) After long examination I have been unable to find any character which would distinguish with certainty these females from *H. grandis* Cast. from W. Africa or *H. grandis* mihi from southern Africa. They are not, however, from the shape of the prosternal process, *H. caffer*; Gschwendtner, Balfour-Browne, which species has an entirely different aedeagus (fig. 32).

Since *H. caffer* Boh. was described from 'Caffraria orientali', although the labels of the type specimens bear only the name 'Caffraria', it seems more than probable that Guignot was right in his diagnosis of *H. caffer* Boh., and Gschwendtner, Balfour-Browne and myself wrong. *H. caffer*; Gschw. *nec* Boh. must therefore be renamed. Whether *H. caffer* Boh. is a geographical subspecies of *H. grandis* Cast. or a full species is a moot point. Since the aedeagi of the two forms appear to be reasonably constant and certainly recognisable, although I doubt the possibility of distinguishing one species from the other by external characters only, it seems better to retain them as separate species. In my experience *caffer* Boh. occurs south of the equator, predominantly in the east, and *grandis* Cast. north of the equator with a western bias. Guignot considered that *H. caffer* Boh. was to be considered as an aethiopic and therefore homologised *H. major* Shp. from Egypt with it. In view of the occurrence of *H. grandis* Cast. in the Sudan it seems more likely that the usually accepted synonymy of *H. major* equals *H. grandis* Cast. is correct.

**DISTRIBUTION.** *H. grandis* Cast.—Senegal (type), Mauritania, Mali (Fr. Sudan), Gabon, Nigeria! Sudan! *H. caffer* Boh.—'Caffraria orientali' (types), Transvaal (S. Africa), Rhodesia, Zambia (N. Rhodesia), Malawi (Nyasaland), Mozambique, Zanzibar, Tanzania (Tanganyika), Ruanda, Congo.

### *Hyphydrus [Allophydrus] residuus* spec. nov., fig. 32

**Hyphydrus [Allophydrus] caffer**; Gschwendtner *nec* Boh., 1935 p. 19; Balfour-Browne *nec* Boh., 1950 p. 361; Omer-Cooper *nec* Boh., 1965 p. 113.

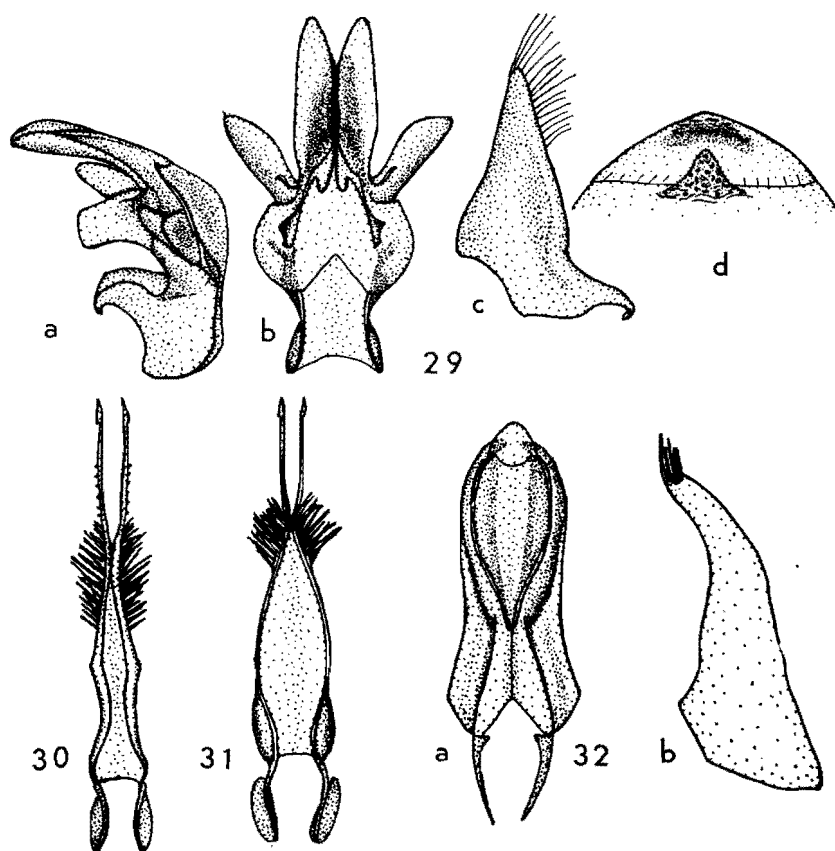
L. 6.2–6.5 mm. Widely oval, outline discontinuous, shoulders of the elytra much wider than the base of the pronotum; thick and convex but depressed in the scutellary region; black and testaceous or rufo-testaceous.

**Head.** Testaceous, shining but faintly reticulate in the middle, moderately punctured, punctures not very large, slightly irregular; back of head finely punctured. Clypeal border rather thick, sub-truncate. Antennae testaceous.

**Pronotum.** Black with a testaceous border widened in the middle and, in the type, with an indication of a transverse median testaceous band. Sides finely bordered, almost straight but curved in front and rather strongly contracted. Shining and not reticulate except that sometimes there is a trace of reticulation in the middle; rather densely and irregularly punctured, the punctures being a little finer on the disc and a little sparser in a transverse region on each side of it.

**Elytra.** Black with an irregular testaceous band starting at the sides as basal but becoming sub-basal, and internally sending a short prolongation backwards; a lateral testaceous mark connected with the side of the basal band, three small postmedian lateral

testaceous marks, a preapical irregular transverse band not reaching the suture and an apical mark also testaceous. Shoulders very rounded and much wider than the base of the pronotum, very convex behind the middle but flattened or slightly concave on the disc in front. Punctuation dense and uneven.



Figs 29-32. 29. Aedeagus of *H. fuscus* O.-C.; a-median lobe side view, b-median lobe dorsal view c-paramere, d-apical and preapical abdominal sternites of the male. 30. Median lobe of the aedeagus of *H. grandis* Cast., dorsal view. 31. Median lobe of the aedeagus of *H. caffer* Boh., dorsal view. 32. a-median lobe of the aedeagus of *H. residuus* spec. nov., dorsal view, b-paramere.

*Underside.* Testaceous or rufo-testaceous including the legs and epipleura, with the hind part of the meta coxae and sides of the abdominal sternites brownish. Rather strongly and densely punctured, especially the metacoxal processes. Apophysis of the pronotal process rather short and its sides very rounded. Posterior tibial spines sinuate.

**MALE.** Protrochanters supplied with long hairs and with the apex slightly drawn out to a blunt point. Anterior tarsi slightly widened and flattened. Aedeagus as in fig. 32.

**FEMALE.** Head and pronotum clearly reticulate and mat, elytra faintly reticulate and only a little less shining than in the male. Anterior and meso-tarsi slightly narrower than in the male and with the joints laterally compressed.

**DISTRIBUTION.** Botswana, Chobe swamp 24.xi.1930 (type); Zambia, Namwazi 6.vi.1914 (the male from Namaula recorded as *H. caffer* Boh. by Balfour-Browne is really that species, although it does not accord with his description, but 2 males which I have seen from Namwazi belong to this newly named species).

This species is very like *H. grandis* Cast. and *H. caffer* Boh. but the punctuation is a little coarser and denser, the sides of the pronotum less rounded in front, straighter than in the majority of *grandis* and *caffer*, and more contracted in front. The third joint of the anterior tarsi of the male is shorter than in either of the other species, the apophysis of the prosternal process is rounder and shorter and the aedeagus is entirely different (fig. 32).

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